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10/699,359	10/30/2003	Aditya Mohan	200208216-1	2528

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EXAMINER	
HOSSAIN, TANIM M	
ART UNIT	PAPER NUMBER
2445	

NOTIFICATION DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/699,359	MOHAN ET AL.	
	Examiner	Art Unit	
	Tanim Hossain	2445	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 July 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-25* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 17-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 20 recites the limitation "the computer readable medium of claim 11". There is insufficient antecedent basis for this limitation in the claim, as claim 11 is a system claim, and thus there was no previous mention of a computer readable medium in claim 11.

Further, claims 17-20 recite the limitation "the computer-readable medium". There is insufficient antecedent basis for this limitation in the claim, as claim 16 discloses a "computer-readable storage medium" and not a "computer-readable medium".

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 24 and 25 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. The means for storing data objects, forming data connections, storing Bloom-filters, forming a query, selecting nodes, and sending the query all constitute software means, as evidenced by paragraphs 0068 and 0073 of the present specification, that disclose that software may be used to perform the operations described in the specification. The amendment is directed to solving issues of statutory subject matter within method claims, but not of claims relating to a data processing arrangement, as the means may still be constituted by software per se.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-20, 24 and 25 are rejected under 35 U.S.C. 102(e) as being anticipated by Bosley (U.S. 2003/0126122).

As per claim 1, Bosley teaches a processor-implemented method for searching for a data object in a plurality of nodes forming a peer-to-peer network, the method comprising: forming Bloom-Filters at the nodes as a function of data available via the nodes (paragraphs 0008-0013, 0090, 0105); communicating the Bloom-filters between peer-to-peer coupled nodes of the peer-

to-peer network that have formed connections using incentive-based criteria to control whether one node connects to another node (0014, 0039, 0093, 0105, 0112-0114); forming a search expression for locating the data object (0008-0013); selecting nodes to propagate the search expression as a function of the Bloom-filters and the incentive based criteria (0105, 0112-0114, 0141, 0172); propagating the search expression to the selected nodes (0112-0114); and outputting a result of the search expression from nodes that satisfy the search expression (0112-0114).

As per claim 2, Bosley teaches the method of claim 1, wherein forming respective Bloom filters at the nodes includes combining Remote Bloom-filters (RBFs) received from peer-to-peer coupled nodes of the respective nodes (0105, 0112-0114).

As per claim 3, Bosley teaches the method of claim 1, wherein selecting the nodes includes forming a query Bloom-filter based on the search expression and comparing the query Bloom-filter to the respective Bloom-filters (0105, 0112-0114).

As per claim 4, Bosley teaches the method of claim 3, wherein comparing the query Bloom-filter to the respective Bloom-filters includes forming a ranking associated with respective Bloom-filters as a sum of bits of the query Bloom-filter that match the bits of the respective Bloom-filter (0090, 0105, 0112-0114).

As per claim 5, Bosley teaches the method of claim 3, wherein comparing the query Bloom-filter to the Bloom-filters includes forming a ranking associated with respective Bloom-filters as a count of bits of the query Bloom-filter that match the bits of the respective Bloom-filter (0112-0114, 0168-0170, 0173).

As per claim 6, Bosley teaches the method of claim 1, wherein forming the respective Bloom filters at the nodes includes forming the respective Bloom filters as a function of a local Bloom-filter based on data locally accessible by the respective nodes (0090, 0105, 0112-0114).

As per claim 7, Bosley teaches the method of claim 1, wherein the peer-to-peer network comprises a Gnutella network (0100).

As per claim 8, Bosley teaches a system comprising: a plurality of data processors coupled via a peer-to-peer network arrangement, each data processor including: a network interface arranged to provide one or more respective connections with one or more associated data processor of the peer-to-peer network arrangement, the connections formed using an incentive-based criteria (0014, 0039, 0093, 0112-0114, 0168-0170, 0173); a memory for storing one or more respective remote Bloom filters representing data accessible via the associated connections (0112-0114, 0168-0170, 0173); and a processing unit arranged to form a query Bloom-filter based on a data query; select nodes to propagate a search expression associated with the query based on incentive-based criteria and the one or more respective remote Bloom filters (0014, 0039, 0093, 0105, 0112-0114, 0141, 0172); select a subset of the connections as a function of the query Bloom-filter and the respective remote Bloom-filters associated with the connections (0112-0114, 0168-0170, 0173); and send the data query to the subset of the connections (0112-0114, 0168-0170, 0173).

As per claim 9, Bosley teaches the system of claim 8, wherein at least one data processor of the plurality of data processors further includes a local data storage adapted for storing data objects (0209).

As per claim 10, Bosley teaches the system of claim 9, wherein the memory of the at least one data processor is configured for storing a local Bloom-filter representing data accessible via the local data storage (0112-0114, 0168-0170, 0173).

As per claim 11, Bosley teaches the system of claim 8, wherein the processing units of the data processors are further arranged to publish a Bloom-filter to a selected connection of the one or more connections, the Bloom-filter representing data accessible via the respective data processors (0112-0114, 0168-0170, 0173).

As per claim 12, Bosley teaches the system of claim 11, wherein the Bloom filter is formed as a logical OR of the remote Bloom filters of the respective data processors except for the remote Bloom filter associated with the selected connection (0112-0114, 0168-0170, 0173).

As per claim 13, Bosley teaches the system of claim 11, wherein at least one data processor of the plurality of data processors further includes a local data storage adapted for storing data, and the memory of the at least one data processor is configured for storing a local Bloom-filter representing data accessible via the respective local data storage (0112-0114, 0168-0170, 0173).

As per claim 14, Bosley teaches the system of claim 13, wherein the Bloom filter is formed as a logical OR the local Bloom-filter; (0112-0114, 0168-0170, 0173) and the remote Bloom filters of the respective data processor except for the remote Bloom filter associated with the selected connection (0112-0114, 0168-0170, 0173).

As per claim 15, Bosley teaches the system of claim 8, wherein the peer-to-peer network arrangement includes a Gnutella network arrangement (0100).

As per claim 16, Bosley teaches a computer-readable medium having instructions stored thereon which are executable on a processor for performing steps comprising: forming one or more respective peer-to-peer connections with one or more network peers of the processor using an incentive-based criteria (0039, 0093, 0105, 0112-0114, 0141, 0172); receiving respective remote Bloom-filters representing data accessible via associated peer-to-peer connections (0112-0114, 0168-0170, 0173); forming a query Bloom-filter based on a data query (0112-0114, 0168-0170, 0173); selecting nodes to propagate a search expression associated with the query based on incentive-based criteria and the one or more respective remote Bloom filters (0039, 0093, 0105, 0112-0114, 0141, 0172); selecting a subset of the peer-to-peer connections as a function of the query Bloom-filter and the respective remote Bloom filters associated with the peer-to-peer connections (0112-0114, 0168-0170, 0173); and sending the data query to the subset of the connections (0112-0114, 0168-0170, 0173).

As per claim 17, Bosley teaches the computer-readable medium of claim 16, wherein the steps further include forming a local Bloom-filter based on data accessible via a local data storage of the processor (0112-0114, 0168-0170, 0173).

As per claim 18, Bosley teaches the computer-readable medium of claim 16, wherein the steps further include sending a Bloom-filter to a selected peer-to-peer connection of the one or more peer-to-peer connections indicating data accessible via the processor (0112-0114, 0168-0170, 0173).

As per claim 19, Bosley teaches the computer-readable medium of claim 18, wherein the Bloom filter is formed as a logical OR of the remote Bloom filters of the processor except for the

remote Bloom filter associated with the selected peer-to-peer connection (0112-0114, 0168-0170, 0173).

As per claim 20, Bosley teaches the computer-readable medium of claim 11, wherein the peer-to-peer connections utilize a Gnutella protocol (0100).

As per claim 24, Bosley teaches a data processing arrangement, comprising: processor based means for storing data objects (0112-0114, 0168-0170, 0173); processor based means for forming respective peer-to-peer data connections with one or more network peers using an incentive-based criteria (0039, 0093, 0105, 0112-0114, 0141, 0172); processor based means for storing remote Bloom-filters associated with respective peer-to-peer data connections, the Bloom-filters indicating data accessible via the respective peer- to-peer data connections (0112-0114, 0168-0170, 0173); processor based means for forming a query for locating one or more data objects of the network peers (0112-0114, 0168-0170, 0173); processor based means for selecting nodes to propagate a search expression associated with the query based on incentive-based criteria and the one or more respective remote Bloom filters (0039, 0093, 0105, 0112-0114, 0141, 0172); and processor based means for sending the query to a subset of the peer-to-peer data connections as a function of the query and the Bloom filters associated with the respective peer-to-peer data connections (0112-0114, 0168-0170, 0173).

As per claim 25, Bosley teaches the data processing arrangement of claim 24, wherein the peer-to-peer data connections utilize a Gnutella protocol (0100).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 21-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dharmapurikar (U.S. 2005/0086520) in view of Bosley (U.S. 2003/0126122).

As per claim 21, Dharmapurikar teaches a method for updating a Bloom-filter array having a plurality of bits that indicate data accessible via a network, comprising: associating respective counters with the bits of the Bloom-filter array (0040-0041, 0046); receiving a Bloom-filter update having a plurality of bits associated with the bits of the Bloom-filter array that indicate a change in the data accessible via the network (0040-0041); changing the respective counters based on the associated bits of the Bloom filter update (0040-0041); setting the bits of the Bloom-filter array to zero where the respective counters associated with the bits are zero (0040-0041); and setting the bits of the Bloom-filter array to one where the respective counters associated with the bits are greater than zero (0040-0041). Dharmapurikar does not specifically teach that the network is a peer-to-peer network. Bosley teaches the reception of Bloom-filter updates within a peer-to-peer network (0112-0114, 0168-0170, 0173). It would have been obvious to one of ordinary skill to include the use of a peer-to-peer network to implement the counter functions, as claimed, as taught by Bosley in the system of Dharmapurikar. The motivation for doing so lies in the fact that the use of a peer-to-peer network is a well known type of network communication, and therefore its inclusion in the network functions of

Dharmapurikar would have been envisioned by one of ordinary skill as an obvious design choice.

As per claim 22, Dharmapurikar-Bosley teaches the method of claim 21, wherein the Bloom-filter update indicates data added to the peer-to-peer network, and changing the counters based on the bits of the Bloom-filter update includes incrementing all counters associated with non-zero bits of the Bloom-filter update (Dharmapurikar: 0040-0041).

As per claim 23, Dharmapurikar-Bosley teaches the method of claim 21, wherein the Bloom-filter update indicates data removed from the peer-to-peer network, and changing the counters based on the bits of the Bloom-filter update includes decrementing all counters associated with non-zero bits of the Bloom-filter update (Dharmapurikar: 0040-0041).

Response to Remarks

Applicant's remarks filed on July 1, 2009 have fully been considered.

a. Upon review of the Bosley reference, it is respectfully submitted that paragraphs 0014, 0039, 0093, 0141, and 0172 teach the use of incentive-based criteria for selecting and connecting nodes, as claimed.

b. A new ground of rejection is set forth for claims 21-23.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tanim Hossain whose telephone number is (571)272-3881. The examiner can normally be reached on 8:30 am - 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivek Srivastava can be reached on 571/272-7304. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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